bioEnergy! works

Another RBEP Success: Growing trees as a source of fuel

The Regional Biomass Energy Program (RBEP) promotes increased production and use of bioenergy resources, and helps advance the use of renewable biomass feedstocks and technologies. Historically, the RBEP leverages two nonfederal dollars for every federal dollar it administers.

Benefits of Growing Trees as Biofuel

- *Reduces U.S. dependence on imported oil*
- *Helps farmers put idle cropland to use*
- *Boosts rural economies by developing new local industries*
- *Helps reduce greenhouse gas levels*
- *Reduces acid rain, soil erosion, and water pollution*

"The information we obtain through this project will possibly help foster the development of a biofuel industry here and provide an alternative crop for area farmers."

E. Austin Short, III, State Forester
Delaware Department of Agriculture Forest Service

U.S. Department of Energy
Regional Biomass Energy Program
www.ott.doe.gov/rbep

Challenge

Biomass, which is plant-derived organic matter that can be processed to extract energy, is possibly the most under-utilized renewable energy resource in the United States today. Biomass offers tremendous environmental advantages compared with coal, petroleum, and natural gas: it is renewable and removes carbon dioxide from the air as it grows, which helps slow the buildup of "greenhouse gases" that may alter the Earth's climate.

The U.S. currently derives only 4% of its energy from biomass, while estimates suggest biomass-derived biofuels (fuels such as ethanol, biodiesel, and methanol) could supply an estimated 20% of U.S. requirements. One reason for the disparity is the difficulty in producing biofuels at a cost comparable to that of petroleum. Cost-effectively producing biofuels from trees, for example, requires that farmers start with extremely hardy trees that are exceptionally resistant to drought, insects and diseases, and that also produce high yields on many kinds of cropland. Trees with that combination of attributes aren't readily available in nature, so researchers are nurturing hybrids in the laboratory and then thoroughly testing candidate hybrids in the field.

(Photos courtesy of the Delaware Department of Agriculture Forest Service.)

Partners

U.S. Department of Energy
Regional Biomass Energy Program

Delaware Department of
Agriculture Forest Service

State University of New York

U.S. Department of Agriculture
Forest Service

RBEP Solution

The U.S. Department of Energy's Regional Biomass Energy Program helped fund a biofuel demonstration site on marginal cropland located within Delaware's Blackbird State Forest. The project involved planting 15,600 fast-growing hybrid willow trees and hybrid poplar trees on the 2.5 acres of land. The hybrids were chosen based on their successful performances in other areas of the U.S. The overall goal is to assess the economic viability of using the trees in producing biofuel under local growing conditions. The continuing project aims to evaluate how genetic and environmental factors interact in influencing the growth and survivability of the trees.

Results

The project is helping determine the suitability of hybrid trees to environmental conditions in Delaware by studying a wide range of factors, such as survival rates, moisture content, and biomass production rates. The first-year production of two types of hybrid poplars was much greater (3,082 kilograms/hectare and 2,485 kilograms/hectare) than that of the top willow hybrid (only 190 kilograms/hectare). This suggests that hybrid poplars may be the better trees for biomass production in the Delaware area.

Benefits

The project will maintain orchards of hybrid trees in preparation for commercial-scale trials and could spur the development of a regional biofuel industry. Biomass crops could help revitalize the farm economy by putting idle cropland to productive use. Trees grown as biomass can be planted on land that is too erosion-prone for row crops, and in soil that has been worked too hard for too long and thus rendered unsuitable for agriculture. These crops could also restore the land's vigor by stabilizing the soil, reducing erosion and runoff, and restoring organic matter. Another beneficiary of biomass energy could be America's forests, because energy researchers hope to protect these natural resources by developing alternate sources of wood.

For more information:

Rick Handley
Northeast Regional
Biomass Program
400 N Capitol Street Suite 382
Washington DC 20001

Phone: (202) 624-8454

Fax: (202) 624-8463

E-mail: rhandley@capital.net